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NASA Procedural Requirements

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CHAPTER 7. Safety Training and Personnel Certification

7.1 Purpose

This chapter describes the requirements for establishing safety training programs and the minimum training certification levels necessary for personnel involved in potentially hazardous NASA operations. Much of this training is available on the Internet. Instructor-based courses are available through the NASA Safety Training Center (NSTC). The NSTC can be reached by telephone at (281) 244-1284. This chapter also references Personnel Reliability Program (PRP) requirements that may be imposed for certain mission-critical job functions.

7.2 Responsibilities

7.2.1 Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall provide training to assist managers/supervisors and employees with their specific roles and responsibilities in safety programs ([Requirement 25103](#)).

Note: EO 12196, Occupational Safety and Health Programs for Federal Employees, dated February 26, 1980, as amended, and 29 CFR 1960, Subpart H, Training, require that NASA establish comprehensive safety training programs. See NPR 8715.1, NASA Occupational Safety and Health Programs.

7.2.2 The Chief, Safety and Mission Assurance, shall:

- a. Assist Center counterparts in ensuring that 29 CFR Part 1960, Basic Program Elements for Federal Employees, Occupational Safety and Health and Health Programs, and Related Matters, requirements are followed (Requirement).
- b. Ensure Agency-wide consistency and uniformity in the NASA safety training program ([Requirement 25109](#)).
- c. Act as a clearinghouse for information regarding available safety training courses and materials (Requirement).
- d. Develop, in conjunction with the Training and Development Division at NASA Headquarters, training courses suited to specific Agency safety needs ([Requirement 32145](#)).
- e. Co-develop, in conjunction with the OCHMO at NASA Headquarters, training courses and materials in areas of overlapping regulatory or programmatic responsibility ([Requirement 32146](#)).

Note: Safety forms and reports are retained per NPR 1441.1, NASA Records Retention Schedules.

7.2.3 Center training and personnel development offices and safety offices shall be jointly responsible for:

- a. Determining safety and certification training needs ([Requirement 25105](#)).

- b. Overseeing training efforts (Requirement).
- c. Identifying budget requirements for training ([Requirement 32141](#)).
- d. Developing training courses and materials ([Requirement 32142](#)).
- e. Assuring that training records reflect employee safety training ([Requirement 32143](#)).

7.3 Planning and Implementation of the Safety Training Program

7.3.1 Center Directors shall:

- a. Formulate and document a comprehensive safety training program (see Figure 7-1 below) at their Center ([Requirement 32147](#)).
- b. Develop and maintain a Center Safety Training Plan (Requirement).
- c. Ensure that all persons engaged in physical work are instructed in accident prevention and fully informed of the hazards involved ([Requirement 32301](#)).
- d. Ensure that training for all persons engaged in electrical work includes first-aid procedures and cardiopulmonary resuscitation ([Requirement 32302](#)).
- e. Ensure that personnel at risk of exposure to cryogenic liquids receive training in correct first aid measures for these liquids (Requirement).
- f. Provide system safety training to meet the needs of programmatic activities ([Requirement 32116](#)).
- g. Ensure that software safety personnel and project/program lead software safety analysts are trained to NASA-STD-8719.13, Software Safety Standard, and NASA-STD-8739.8, Software Assurance Standard (Requirement).

Figure 7.1. Considerations for Developing a Safety Training Program for all Employees

- *Identification of OSHA, National Fire Protection Association (NFPA), FAA, EPA, emergency actions and contingency responses, and other appropriate training requirements and guidelines.*
- *Identification of employee training groups within the Center population and determination of present training levels.*
- *Identification of specific tasks, hazardous conditions, or specialized processes and equipment encountered by employees that would require safety training; e.g., certification training, cryogenic liquid carrier driver, hazardous waste operations.*
- *Documentation for safety training program, including written training syllabi, course objectives, and lesson plans (lesson objectives, measurable desired learning outcomes, and formal evaluation instruments).*
- *Identification and documentation of the planned training to be given to each employee category and the intended approach (e.g., course, literature).*
- *Determination of the availability of safety training resources. A lack of a specific training resource may require the development of specialized training course materials.*
- *Published training schedules.*
- *Review and evaluation of training needs and schedules, and*

revision when necessary.

- *Hazard recognition training.*
- *Training for safety committee members.*

h. Ensure that operators of motorized equipment (including motor vehicles) have formal initial training, consisting of both classroom and operational testing, if operating the motorized equipment involves skills beyond those associated with normal, everyday operation of private motor vehicles, to assure operator proficiency ([Requirement 32271](#)).

i. Ensure that operators of motorized equipment have periodic refresher training and testing, as determined by the safety office, if operating the motor vehicle requires skills beyond those associated with normal, everyday operation of private motor vehicles ([Requirement 32272](#)).

j. Annually review operations being performed at their Center to ensure that the implemented safety training program is working effectively and to identify and include training for jobs that are potentially hazardous in addition to the mandatory listing in paragraph 7.4.5 (Requirement).

Note: Employee safety committees, employee representatives, and other interested groups should be provided an opportunity to assist in the hazardous job identification process.

7.3.2 Center subject matter experts shall review NASA training materials at least annually and update materials as needed when regulatory agencies or changes in NASA policy documents generate technical changes ([Requirement 32148](#)).

7.3.3 Center SMA Directors shall maintain a current copy of the Center Safety Training Plan ([Requirement 25111](#)).

7.4 Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials

7.4.1 Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall ensure that:

a. Personnel who perform or control hazardous operations or use or transport hazardous material have been trained and certified with the necessary knowledge, skill, judgment, and physical ability (if specified in the job classification) to do the job safely ([Requirement 25113](#)).

Note: Many NASA operations involve hazardous materials or chemicals, technology, or systems with potential hazards to life, the environment, or property.

b. Personnel obtain hazardous operation safety certification for those tasks that potentially have an immediate danger to the individual (death/injury to self) if not done correctly, or could create a danger to other individuals in the immediate area (death or injury), or are a danger to the environment ([Requirement 32150](#)).

Note: Detailed training and certification requirements may be found in specific NASA Standards; e.g., NASA-STD-8719.9, Standard for Lifting Devices and Equipment, or NSS 1740.12, Safety Standard for Explosives, Propellants and Pyrotechnics.

c. All contractor personnel engaged in potentially hazardous operations or hazardous material handling are certified via a process similar to that for NASA personnel ([Requirement 32173](#)).

7.4.2 Center SMA Directors shall develop required safety certification programs for their Center ([Requirement 25106](#)).

7.4.3 Medical offices and cognizant health officials shall:

a. Determine the need for physical and medical examinations including their depth, scope, and frequency to support certification requirements (Requirement).

b. Be responsible for medical certification in health hazard and related activities ([Requirement 32144](#)).

c. Oversee or conduct required personnel medical examinations in support of the safety certification effort (Requirement).

d. Ensure that physical and medical examinations to support certification requirements are in compliance with OSHA and other Federal, State, and local agency applicable codes, regulations, and standards covering the occupation or environment including medical monitoring and recordkeeping requirements ([Requirement 32187](#)).

Note: The need for fitness-for-duty examinations should be based on the hazardous consequences of the employee's inability to perform the job correctly due to physical or mental deficiencies.

7.4.4 Line managers shall manage the certification program for their employees and contractors in accordance with procedures in this NPR ([Requirement 25107](#)).

7.4.5 Hazardous Operations Requiring Safety Certification.

Note: This list is not all inclusive, other safety certification requirements are found in other NASA requirement documents

7.4.5.1 Center SMA Directors or their designees shall ensure:

- a. Flight crew member certification (FAA licensing may not be sufficient) ([Requirement 32151](#)).
- b. Firefighter certification ([Requirement 32152](#)).
- c. Propellant and explosives user certification per NSS 1740.12 ([Requirement 32153](#)).
- d. Propellant and explosives handler certification per NSS 1740.12 ([Requirement 32154](#)).
- e. Rescue personnel certification ([Requirement 32155](#)).
- f. Self-contained breathing apparatus user certification ([Requirement 32156](#)).
- g. Self-contained underwater breathing apparatus user certification ([Requirement 32157](#)).
- h. High-voltage electrician certification that adheres to NASA and State/local requirements ([Requirement 32158](#)).
- i. Altitude chamber operator certification ([Requirement 32159](#)).
- j. High-pressure liquid/vapor/gas system operator certification ([Requirement 32160](#)).
- k. Hyperbaric chamber operator certification ([Requirement 32161](#)).
- l. Tank farm worker certification ([Requirement 32162](#)).
- m. Wind tunnel operator certification ([Requirement 32163](#)).
- n. Welder certification ([Requirement 32164](#)).
- o. Laser operator/maintenance personnel certification ([Requirement 32165](#)).
- p. Centrifuge operator certification ([Requirement 32166](#)).
- q. Range safety officer certification ([Requirement 32167](#)).
- r. Crane operator certification ([Requirement 32168](#)).
- s. Certification for riggers for hoisting operations ([Requirement 32169](#)).
- t. Heavy equipment operator certification ([Requirement 32170](#)).
- u. Confined space entry personnel certification ([Requirement 32171](#)).
- v. Certification for lockout/tagout personnel ([Requirement 32172](#)).
- w. Certification for individuals involved strictly with the handling, transport, or packaging of hazardous materials that will not otherwise disturb the integrity of the basic properly-packaged shipping container that holds the hazardous material ([Requirement 25115](#)).

Note: Operations that involve the reduction of palletized or otherwise combined items of packaged hazardous materials qualify as handling. Center safety officials or their designees may require additional hazardous operations safety certifications.

7.4.5.2 Center SMA Directors who certify individuals to perform or control hazardous operations, or to use or transport hazardous material, shall ensure the individuals possess the necessary knowledge, skill, judgment, and physical ability to do the job in a safe and healthful manner ([Requirement 32331](#)).

7.4.6 Certification Requirements.

7.4.6.1 Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum:

- a. A physical examination (see paragraph 7.4.3) ([Requirement 32175](#)).

b. Initial training (classroom, online, and/or on-the-job) ([Requirement 32176](#)).

Note: The level and structure of training is established according to the hazards of the job being performed.

c. A written examination to determine adequacy and retention of training ([Requirement 32177](#)).

d. Periodic refresher training as determined by the Center safety official, including review of emergency response procedures ([Requirement 32178](#)).

e. A recertification period as determined by the Center safety official in the absence of any local, State, or Federal requirements (but not to exceed a 4-year interval) ([Requirement 32179](#)).

f. Applicable requirements of 29 CFR Part 1910, Occupational Safety and Health Standards (Requirement).

g. Specific training in the Federal, NASA, and local rules for preparing, packaging, marking, and transporting hazardous material and/or equipment operation associated with the job ([Requirement 32181](#)).

7.4.6.2 Center training and personnel development offices and Center safety offices shall ensure that drivers or operators of vehicles transporting hazardous materials are instructed in the specific hazards of the cargo or material in their vehicle and the standard emergency and first-aid procedures that should be followed in the event of a spill or exposure to the hazardous material ([Requirement 32182](#)).

Note: Training requirements can be found in 29 CFR Part 1910, Occupational Safety and Health Standards, and 49 CFR Part 177, Carriage by Public Highway.

7.4.6.3 Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that:

a. Personnel who are hazardous-operations-safety-certified or hazardous-material-handler-certified are identified through the issuance of a card, license, or badge (to be immediately available) or a listing on a personnel certification roster or database ([Requirement 32188](#)).

b. Personnel certification rosters indicate the name, date, materials or operations for which certification is valid, name of certifying official, and date of expiration ([Requirement 32189](#)).

7.5 Mission Critical Personnel Reliability Program (PRP)

7.5.1 The Director of each NASA installation shall designate mission critical areas for the Space Shuttle and other critical systems including the International Space Station, designated ELVs, designated payloads, Shuttle Carrier Aircraft, and other designated resources that provide access to space (Requirement).

7.5.2 Personnel having unescorted access to these areas shall meet the suitability, qualification, and screening provisions detailed in 14 CFR Part 1214.5, Space Flight: Mission Critical Systems Personnel Reliability Program: Screening Requirements (Requirement).

7.5.3 Mission Directorate Associate Administrators, Center Directors, project managers, supervisors, COs, and COTRs shall ensure that contracts cover mission critical operations or areas referenced by 48 CFR Part 1852.246-70, NASA FAR Supplement, Mission Critical Space System Personnel Reliability Program (Requirement).

7.6 Hazardous Materials and Chemicals Risk Information

7.6.1 Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that:

a. The risk of all hazardous chemicals produced or imported are evaluated and included in their safety training and certification program ([Requirement 32183](#)).

b. Information involving the risk of all hazardous chemicals is made available to all employees in accordance with 29 CFR Part 1910.1200 ([Requirement 32184](#)).

7.7 Exclusions

7.7.1 This chapter does not apply to personnel engaged in operations that already require skill certification by quality assurance organizations, such as soldering, brazing, welding, crimping, potting, or to personnel performing inspections using dye penetrant, magnetic particle, ultrasonic, radiograph, and magnaflux.

7.7.2 Certification of equipment and facilities is not within the scope of this chapter but may be as important as personnel certification in relation to safety. Information concerning equipment and facilities certification for

operational readiness is found in Chapters 6, 8, and 9.

7.7.3 This chapter shall not be used as a justification for allowing hazardous duty payments, environmental differential pay, or premium pay, nor will the fact that a job qualifies for hazardous duty pay imply that it is covered by this chapter. It has always been NASA safety policy to make all operations as safe as possible. Hazard duty pay differentials are covered in 5 CFR Part 532, Prevailing Rate Systems, and 5 CFR Part 550, Pay Administration (General).

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